Key results of the research
Summary

About the Project

Serious games have become a popular tool for knowledge transfer, behavioural, perceptual or cognitive change. At the same time, effectiveness of the games in behaviour change has been analysed in only several studies.

In that sense, 'Confidence in behaviour changes through serious games', hereinafter referred by its acronym eConfidence, focused on testing whether the use of serious game could produce behavioural changes. eConfidence was a 24 months project that started in November 2016, funded by the European Union's Horizon 2020 research and innovation programme (Grant Agreement No 732420).

The partners of the research project were Instituto Tecnológico de Castilla y León (Spain) (Project Coordinator), European Schoolnet (Belgium), Everis (Spain), Nurogames (Germany), University of Salamanca (Spain) and University of Rijeka, Faculty of Humanities and Social Sciences (Croatia).

About the Study

The eConfidence project defined a methodology for serious game development and tested it with two serious games developed considering behavioural aspects related to two topics: safe use of the Internet (Go Online game) and bullying (School of Empathy game).

Two serious games were developed using a specific methodology for behavioural change, based on the Intervention Mapping Protocol (IMP) and Applied Behaviour Analysis (ABA), with the aim of improving the safe use of the Internet as well as preventing bullying.

The effectiveness of the eConfidence serious games was explored through the pilot study. eConfidence serious games were tested with 343 students aged 12-14 years old. Five schools in Spain and five schools from English-speaking countries (Malta, Ireland and UK) took part in the pilot study, 34 to 36 students participated from each school.

Evaluation of the games was done comparing group of students who played game with group that received no intervention, and a group with different type of intervention (playing different game). Analyses were performed in order to examine the effects of the two video games on students' knowledge, behaviours and attitudes. Some of the variables analysed were the knowledge and behaviours related to safe use of the Internet and bullying, as well as attitudes, perceived behaviour control, self-efficacy, subjective norms and behaviour intentions related to both topics. Furthermore, other personal variables relevant for behaviour in bullying situations were analysed such as social skills, assertiveness, empathy, and friendship. In addition, students' in-game behaviour in both games were analysed.

Results

Initial knowledge about addressed two topics (safe use of internet and bullying) in both samples (Spanish and English speaking) was excellent and students' target social behaviours were appropriate, leaving little room for improvement. However, when the students have less knowledge about the topic, there have been some indications that the gaming activity could be effective for knowledge improvement.
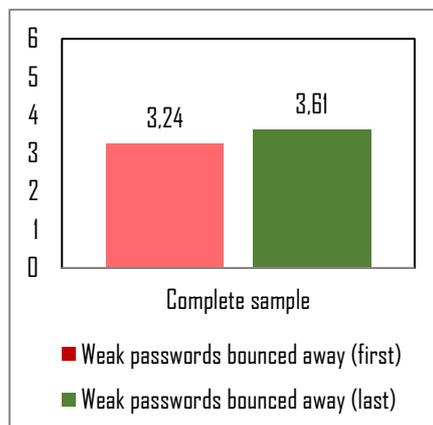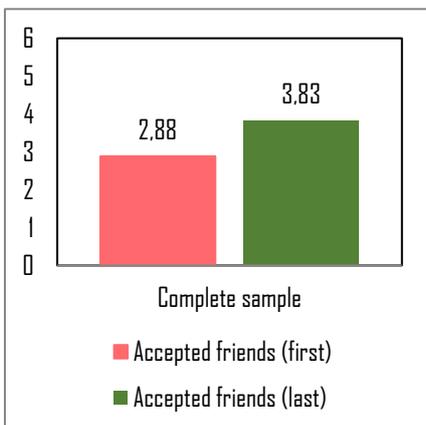
KNOWLEDGE ABOUT SAFE USE OF THE INTERNET (LESS KNOWLEDGE SAMPLE)

── Play Go Online game   ── Control group
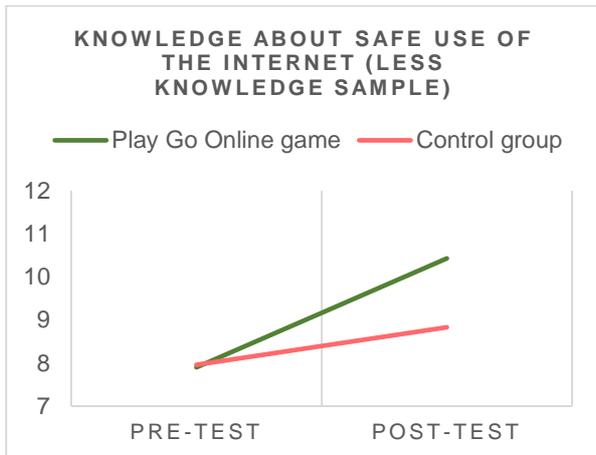
In sum, for game to be efficient in changing students' knowledge and behaviour it should be tailored according to students' previous knowledge and behaviour, or the game should be applied to students with insufficient knowledge and inadequate behaviour.

On the other hand, in-game behaviour showed positive changes. At the end of the gaming activities with Go Online game, students better distinguished between reliable and unreliable people at Internet, and between strong and weak passwords comparing to the beginning of playing. This change was related to number of times that students played mini-games.

Complete sample

■ Accepted friends (first)
■ Accepted friends (last)

Complete sample

■ Weak passwords bounced away (first)
■ Weak passwords bounced away (last)

Regarding playing School of Empathy game, students who more frequently participated in dialogs in different roles (victim, bystander, and bully), showed higher perceived control and self-efficacy in protecting the victim and reported more assertive and less aggressive reactions in everyday situations in the post-test.

The results of eConfidence study also stress the importance of players' game experience in obtaining beneficial outcomes of the game. Immersion in the game and perceived competence during game playing can bring about positive psychological outcomes.

Students' point of view

Students' point of view is important as they are the final users of the games. Their opinion highlighted three important aspects: learning, fun and the technical characteristics of the games. Students reported that they were able to learn contents such as the use of secure passwords, the use of social media, rules for using this kind of media, what bullying is and how they can prevent it, and what it means to be a victim, bully or bystander in different situations.

The insights from students' commentaries revealed that some students found games fun and entertaining and some students perceived some parts repetitive and boring. Therefore, dynamic tailoring based on the difficulty level the player can master (e.g. via providing hints when the challenge is too hard) could provide all players with an optimal level of challenge. On the other hand, children are accustomed to dynamic games with high graphic quality and therefore serious games should find good balance between fun and education.

Other eConfidence benefits

There were benefits for schools to participate in a European project, exchanging their experiences with other educational centres and participated in the analysis of the possibilities of serious games as an educational resource.

Above all, eConfidence contributes to the improvement of the field of game design in the area of serious games for education, providing a specific methodology for the design of games intended at behavioural change in terms of design, analysis and assessment of this kind of games.